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10/688,807	10/17/2003	Juha Ella	944-005.016	9730

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EXAMINER	
WEST, LEWIS G	
ART UNIT	**PAPER NUMBER**
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/688,807	ELLA ET AL.	
	Examiner	Art Unit	
	Lewis G. West	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12,13 and 15-37* is/are rejected.

7)☒ Claim(s) *11 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10, 12, 13 and 15-37 rejected under 35 U.S.C. 102(e) as being anticipated by Klemetti (US 2004/0162107).

Regarding claim 1, Klemetti discloses a transceiver front-end for use in a portable communication device, the communication device having a first antenna and a second antenna electrically separated from the first antenna, the transceiver front-end (Figure 5) having a plurality of signal paths for conveying communication signals in the communication device, including at least a first signal path for conveying a communication signal in a first frequency band (See the signal path in Figure 5, 105 → 23 → 62→42 →11), and a second signal path for conveying a communication signal in a second frequency band (See the signal path in Figure 5, 106 → 24 → 63→43 →46 →12), which is at least partially overlapped with the first frequency band, said front-end comprising: a first feed point, operatively connected to the first antenna, for conveying the communication signals in the first signal path in the communication device via the first antenna (See the signal path in Figure 5, 105 → 23 → 62→42 →11); and a second feed point, operatively connected to the second antenna (See the signal path in Figure 5, 106 → 24 → 63→43 →46 →12), for conveying the communication signals in the second signal path in the communication device via the second antenna so that the communication signals in the partially

overlapped frequency bands are conveyed via different antennas. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 2, Klemetti discloses the transceiver front-end of claim 1, wherein the first frequency band substantially covers a frequency range of 1930 MHz to 1990 MHz, and the second frequency band substantially covers a frequency range of 1920 MHz to 1980 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 3, Klemetti discloses the transceiver front-end of claim 1, wherein the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz, and the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 4, Klemetti discloses the transceiver front-end of claim 3, further comprising a first module, operatively connected to the first feed point, for disposing the first signal path for transmitting the communication signals, and a second module, operatively connected to the second feed point, for disposing the second signal path for receiving the communication signals. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 5, Klemetti discloses the transceiver front-end of claim 4, wherein the second module further comprises a third signal path for reception in a third frequency band different from the second frequency band. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 6, Klemetti discloses the transceiver front-end of claim 5, wherein the third frequency band substantially covers a frequency range between 2110 MHz and 2170 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 7, Klemetti discloses the transceiver front-end of claim 6, wherein the communication signals in the first and second frequency bands are transmitted in a GSM mode, and the communication signals in the third frequency band are transmitted in a W-CDMA mode. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 8, Klemetti discloses the transceiver front-end of claim 7, wherein the second module further comprises a fourth signal path for transmission substantially in a frequency range of 1920 MHz to 1980 MHz in a W-CDMA mode. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 9, Klemetti discloses the transceiver front-end of claim 8, wherein the first module further comprises a fifth signal path for reception substantially in a frequency range of 1930 MHz to 1990 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 10, Klemetti discloses the transceiver front-end of claim 1, wherein the first frequency band substantially covers a first frequency range of 1710 MHz to 1785 MHz for transmission, and a second frequency range of 1850 MHz to 1910 MHz for transmission, and the second frequency band substantially covers a third frequency range of 1805 MHz to 1880 MHz for reception. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 12, Klemetti discloses the transceiver front-end of claim 10, wherein the first feed point is also connected to a third signal path for receiving communication signals substantially in a frequency range of 1930 MHz to 1990 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 13, Klemetti discloses the transceiver front-end of claim 12, wherein a switching circuit (62) operatively connected to first feed point for providing a switching function between the first signal path and the third signal path. (Figure 5)

Regarding claim 15, Klemetti discloses the transceiver front-end of claim 13, wherein the switching means comprises: a first solid state switch connected in series to the first signal path, and a second solid state switch connected in series to the third signal path. (Figure 5 and paragraph 0042)

Regarding claim 16, Klemetti discloses the transceiver front-end of claim 12, wherein the communications signals received in the third signal path are transmitted in a GSM mode. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 17, Klemetti discloses the transceiver front-end of claim 16, wherein the first feed point is further connected to signal paths for transmission and reception of communication signals in a GSM mode operating in a frequency range lower than 1000 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 18, Klemetti discloses the transceiver front-end of claim 1, wherein the first frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for transmitting the communication signals, and the second frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for receiving the communication signals, and wherein the second feed point is also connected to a third signal path for reception of communication signals substantially in a frequency range of 1930-1990 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 19, Klemetti discloses the transceiver front-end of claim 1, wherein the first frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for transmitting the communication signals, and the second frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for receiving the communication signals, and

wherein the first feed point is also connected to a third signal path for transmission of communication signals substantially in a frequency range of the 1920 MHz-1980 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 20, Klemetti discloses the transceiver front-end of claim 18, wherein the first feed point is also connected to a fourth signal path for transmission of communication signals substantially in a frequency range of the 1920 MHz-1980 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 21, Klemetti discloses the transceiver front-end of claim 20, wherein the first frequency band also covers a further frequency range substantially between 1710 MHz to 1785 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 22, Klemetti discloses the transceiver front-end of claim 21, wherein the second feed point is also connected to a fifth signal path for reception of communication signals in a frequency range substantially between 2110 MHz and 2170 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 23, Klemetti discloses the transceiver front-end of claim 22, wherein the first feed point is also connected to further signal paths for transmission and reception of communication signals in a GSM mode operating in a frequency range lower than 1000 MHz. (Fig. 5; Paragraphs 0038-0040),

Regarding claim 24, Klemetti discloses the transceiver front-end of claim 22, wherein the portable communication device further comprises a third antenna (13), said transceiver front-end further comprising a third module having a third feed point operatively connected to the third antenna, the third feed point electrically separated from the first and second feed point, wherein

the third module further comprises at least one further signal path for receiving a communication signal substantially in one of the frequency ranges: (1805-1880 MHz), (1930-1990 MHz), and (2110-2170 MHz). (Fig. 5; Paragraphs 0038-0040)

Regarding claim 25, Klemetti discloses a method for reducing reception loss in a portable communication device, the communication device having a first antenna, a second antenna electrically separated from the first antenna, and a transceiver front-end for conveying communication signals in the communication device, wherein the transceiver front-end comprises: a first feed point, operatively connected to the first antenna (See the signal path in Figure 5, 105 → 23 → 62→42 →11), a second feed point, operatively connected to the second antenna (See the signal path in Figure 5, 106 → 24 → 63→43 →46 →12),, and a plurality of signal paths, including at least a first signal path for conveying a communication signal in a first frequency band(See the signal path in Figure 5, 105 → 23 → 62→42 →11), and a second signal path for conveying a communication signal in a second frequency band (See the signal path in Figure 5, 106 → 24 → 63→43 →46 →12), which is at least partially overlapping with the first frequency band, said method comprising the steps of: operatively connecting the first signal path to the first feed point, and operatively connecting the second signal path to the second feed point, so that the communication signals in the partially overlapped frequency bands are conveyed via different antennas. (Fig. 5; Paragraphs 0038-0040)

Regarding claim 26, Klemetti discloses the method of claim 25, wherein the first frequency band substantially covers a frequency range of 1930 MHz to 1990 MHz, and the second frequency band substantially covers a frequency range of 1920 MHz to 1980 MHz. (Fig. 5; Paragraphs 0038-0040)

Regarding claim 27, Klemetti discloses the method of claim 25, wherein the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz, and the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz. (Fig. 5; Paragraphs 0038-0040)

Regarding claim 28, Klemetti discloses the method of claim 25, wherein the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for transmission of the communication signals, and the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for reception of the communication signals, and wherein the reception is also carried out in a third signal path in a frequency range substantially between 2110 MHz and 2170 MHz, said method further comprising the step of: operatively connecting the third signal path to the second feed point. (Fig. 5; Paragraphs 0038-0040)

Regarding claim 29, Klemetti discloses the method of claim 28, wherein the transmission is also carried out in a fourth signal path in a frequency range substantially between 1930 MHz and 1990 MHz, said method further comprising the step of: operatively connecting the fourth signal path to the first feed point. (Fig. 5; Paragraphs 0038-0040)

Regarding claim 30, Klemetti discloses the method of claim 25, wherein the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for transmission of the communication signals, and the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for reception of the communication signals, and wherein the reception is also carried out in a third signal path in a frequency range substantially between 2110 MHz and 2170 MHz, said method further comprising the step of: operatively connecting the third signal path to the first feed point. (Fig. 5; Paragraphs 0038-0040)

Regarding claim 31, Klemetti discloses the method of claim 30, wherein the transmission is also carried out in a fourth signal path in a frequency range substantially between 1930 MHz and 1990 MHz, said method further comprising the step of: operatively connecting the fourth signal path to the second feed point. (Fig. 5; Paragraphs 0038-0040)

Regarding claim 32, Klemetti discloses a portable communication device, comprising: a first RF antenna (11); a second RF antenna (12) electrically separated from the first antenna (see Figure 5); and a transceiver front-end having a plurality of signal paths for conveying communication signals in the communication device (See Figure 5 and paragraphs 0030-0034), including at least a first signal path for conveying a communication signal in a first frequency band (See the signal path in Figure 5, 105 → 23 → 62→42 →11), and a second signal path for conveying a communication signal in a second frequency band (See the signal path in Figure 5, 106 → 24 → 63→43 →46 →12), which is at least partially overlapped with the first frequency band (Fig. 5; Paragraphs 0038-0040), wherein the front-end further comprises:

a first feed point, operatively connected to the first antenna, for conveying the communication signals in the first signal path in the communication device via the first antenna; (See the signal path in Figure 5, 105 → 23 → 62→42 →11)

and a second feed point, operatively connected to the second antenna, for conveying the communication signals in the second signal path in the communication device via the second antenna . (See the signal path in Figure 5, 106 → 24 → 63→43 →46 →12)

so that the communication signals in the partially overlapped frequency bands are conveyed via different antennas (Fig. 5; Paragraphs 0038-0040).

Regarding claim 33, Klemetti discloses the communication device of claim 32, wherein the front-end further comprises a first module, operatively connected to the first feed point, for disposing the first signal path, (Fig. 5 ITEM 105)

and a second module, operatively connected to the second feed point, for disposing the second signal path. (Fig. 5 ITEM 106)

Regarding claim 34, Klemetti discloses the communication device of claim 32, wherein the first frequency band substantially covers a frequency range of 1920 MHz to 1980 MHz, (W-CDMA; paragraphs 0038-0040),

and the second frequency band substantially covers a frequency range of 1930 MHz to 1990 MHz. (GSM 1900; paragraphs 0038-0040),

Regarding claim 35, Klemetti discloses the communication device of claim 32, wherein the first frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz, (GSM 1800; paragraphs 0038-0040),

and the second frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz. (GSM 1900; paragraphs 0038-0040),

Regarding claim 36, Klemetti discloses the communication device of claim 32, comprising a mobile phone. [0001]

Regarding claim 37, Klemetti discloses the communication device of claim 32, comprising a communicator device. [0001]

Allowable Subject Matter

Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claim 11, Klemetti discloses the transceiver front-end of claim 10 (see the above rejection) including the use of bandpass filters, and it is also known in the art that matching is necessary in high frequency communications. However the prior art does not teach or fairly suggest the further structure wherein the first signal path comprises: a first end; a second end operatively connected to the first feed point; a first passband filter disposed between the first end and the second end for filtering the communication signals in the first frequency range; a second passband filter disposed in parallel to the first passband filter between the first end and the second end for filtering the communication signals in the second frequency range; a first matching means operatively connected to the first end; and a second matching means operatively connected to the second end. When incorporating all the limitations of the base claim and any intervening claims, none of the prior art discloses the features as claimed.

Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. As shown above, Klemetti discloses the transceiver front-end of claim 13, including the suggested use of PIN diodes in the switching structure (paragraph 0042) as they are well suited for high frequency signals, but does not teach or fairly suggest the further structure wherein the switching means comprises a first PIN diode connected in series to the first signal path, a second PIN diode connected to the third signal path in a shunt configuration, and a phase shifting means connected between the first and second PIN diodes. When incorporating all

the limitations of the base claim and any intervening claims, none of the prior art discloses the features as claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Martin et al (US 2005/0085201) and Ella et al are cited because they have at least one inventor in common and are also related to the field of switching between communications protocols with multiple frequencies. Raghuram et al (US 2004/0204035 A1), Dvorkin (US 6,381,471), Lahlum (US 6,912,406), and Kodin (US 2004/0092285 A1) are also cited as relevant to the art of transceiver devices and frequency switching and filtering. Glocker (US 6,317,608) teaches a method of matching at both input and output points of a signal path in a multiband transceiver system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis G. West whose telephone number is 571-272-7859. The examiner can normally be reached on Monday-Friday 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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